

CLAIMS

1. A method of forming self-attaching female fastener elements, comprising the following steps:

forming a body portion of said self-attaching female fastener elements
5 by rolling a continuous metal strip including radial flange portions on opposed sides of said strip having a crosssection of the flange portions of said self-attaching female fastener elements and a mid-portion between said flange portions;

cutting said strip into discrete segments of equal length each having a length equal to a length of said self-attaching female fastener elements, including end
10 faces;

piercing an opening through said midportion equally spaced between said end faces; and

separately forming generally cylindrical pilot portions having a diameter greater than said opening through said midportion and a length greater than a
15 width of said midportion and press fitting one of said pilot portions in each of said openings, wherein each of said pilot portions has an end face spaced above a plane of said midportion.

2. The method of forming self-attaching female fastener elements as
20 defined in Claim 1, wherein said method includes rolling said continuous metal strip with upstanding flange portions on said opposed sides of said strip each having a top face spaced above a plane of said midportion.

3. The method of forming self-attaching female elements as defined in Claim 2, wherein said method includes rolling a generally planar midportion between said upstanding flange portions.

5 4. The method of forming self-attaching female fastener elements as defined in Claim 1, wherein said method includes separately forming said pilot portion from a metal harder than said body portion.

5. The method of forming self-attaching elements as defined in Claim 4,
10 wherein said method includes forming said pilot portion by cold forming.

6. The method of forming self-attaching female fastener elements as defined in Claim 1, wherein said method includes forming a first opening through one face of said midportion having a first internal diameter, forming a second opening
15 through an opposed face of said midportion having a second internal diameter greater than said first internal diameter, forming said pilot portion with a first portion having a first external diameter generally equal to said second internal diameter of said opening and a second portion having an external diameter greater than said first opening and inserting said second portion of said pilot portion through said second
20 opening and press fitting said second portion of said second portion through said first opening.

7. The method of forming self-attaching female fastener elements as defined in Claim 1, wherein said method includes separately forming a generally cylindrical pilot portion having radially extending portions, wherein said radially extending portions have a major diameter greater than said opening through said midportion and press fitting said pilot portion through said opening.

8. The method of forming self-attaching female fastener elements as defined in Claim 7, wherein said method includes forming radial splines on an external diameter of said pilot portion having a major diameter greater than said opening and press fitting said splines through said opening.

9. The method of forming self-attaching female fastener elements as defined in Claim 8, wherein each of said radial splines include a generally cylindrical outer surface having a diameter greater than said opening through said midportion, an inner surface between said splines having a diameter less than said opening through said midportion and relatively inclined side walls, said method including press fitting said outer surface through said opening through said midportion and deforming said midportion into said inner surface of said splines.

10. A method of forming self-attaching female fastener elements, comprising the following steps:

forming a body portion of said self-attaching female fastener elements by rolling a continuous metal strip including a generally planar midportion and flange portions on opposed sides of said strip each having a top face spaced above a plane of
5 said generally planar midportion;

cutting said strip into discrete segments of equal length each having a length equal to a length of said self-attaching female fastener elements, including end faces;

10 piercing an opening through said midportion equally spaced between said end faces; and

separately forming a pilot portion having a diameter greater than an internal diameter of said opening through said midportion and an axial length greater than a width of said generally planar midportion and press fitting said pilot portion in
15 each of said openings, wherein each pilot portion includes an end face spaced above said plane of said generally planar midportion.

11. The method of forming self-attaching female fastener elements as defined in Claim 10, wherein said method includes forming a generally cylindrical
20 pilot portion having generally radial portions, wherein said generally radial portions have a major diameter greater than said opening forming an interference fit with said opening as said pilot portion is press fit into said opening.

12. The method of forming self-attaching female fastener elements as defined in Claim 10, wherein said method includes forming radial splines on an exterior surface of said pilot portion, wherein said splines have a major diameter greater than said opening, and press fitting said splines into an internal surface of said opening, preventing rotation of said pilot portion relative to said body portion.

13. The method of forming self-attaching female fastener elements as defined in Claim 10, wherein said method includes forming said pilot portion from a metal harder than said body portion.

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14. The method of forming self-attaching female fastener elements as defined in Claim 10, wherein said method includes forming said pilot portion by cold forming.

15. The method of forming self-attaching female fastener elements as defined in Claim 10, wherein said method includes forming a first opening through one face of said midportion having a first internal diameter, forming a second opening through an opposed face of said midportion coaxially aligned with said first opening having a second internal diameter greater than said first internal diameter, forming said pilot portion with a first portion having an external diameter generally equal to said second internal diameter and a second portion having an external diameter greater than said first internal diameter and inserting said second portion of said pilot portion through said second opening.

16. The method of forming self-attaching female fastener elements, as defined in Claim 15, wherein said method includes forming said second portion of said pilot portion with radially extending portions having a major diameter greater than said first internal diameter and press fitting said second portion of said pilot
5 portion into said first opening.

17. A self-attaching female fastener, comprising:
a generally rectangular body portion including flange portions on opposed sides of said body portion and a midportion between said flange portions
10 having an opening therethrough; and
a separately formed, generally cylindrical pilot portion having an axial length greater than said midportion and a major diameter greater than said opening through said midportion of said body portion press fit through said opening having an end face spaced above a plane of said midportion.

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18. The self-attaching female fastener as defined in Claim 17, wherein said pilot portion is formed of a metal harder than said body portion.

19. The self-attaching female fastener as defined in Claim 17, wherein said
20 pilot portion includes a plurality of spaced radial splines having a major diameter greater than an internal diameter of said opening through said midportion and said midportion deformed radially inwardly between said spaced radial splines.

20. The self-attaching female fastener as defined in Claim 19, wherein said spaced radial splines include a generally cylindrical outer surface having an outer diameter greater than said internal diameter of said opening through said midportion and relatively inclined side walls.

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21. The self-attaching female fastener as defined in Claim 19, wherein said spaced radial splines extend to said end face of said pilot portion.

22. The self-attaching female fastener as defined in Claim 17, wherein said
10 opening through said midportion includes a first generally cylindrical opening through one face of said midportion adjacent said end face of said pilot portion and a second opening through an opposed face of said midportion coaxially aligned with said first opening having an internal diameter greater than said first opening, and said pilot portion having a radial flange portion adjacent one end thereof having a diameter
15 generally equal to said diameter of said second opening received in said second opening.

23. The self-attaching female fastener as defined in Claim 17, wherein said flange portions each include an end face spaced above a plane of said midportion.